Thank you for choosing a NIVELCO instrument.
We are sure that you will be satisfied throughout its use.

NIVOPRESS

HYDROSTATIC LEVEL TRANSMITTER

USER'S MANUAL

CE 1418

Manufacturer:
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1. APPLICATION

The NIVOPRESS N submersible hydrostatic level transmitters are applicable for the continuous level measurement of clean or chemically faintly contaminated liquids in bored wells, open reservoirs or tanks. The NC type is recommended for level detection of polluted water. The NIVOPRESS is easy to install in already existing tanks and in deep bored wells and is especially recommneded for controlling of submersible pumps. The use of the supplemental accessories is recommnended. Using the NAW-104 sewage adapter direct contact between the sewage and the diaphragm of the built-in pressure sensor can be avoided. Versions with built-in 4-wire Pt100 temperature sensor are also available.
The **N□K-3□□-□ Ex** types can be used in explosion hazardous environment.

2. TECHNICAL DATA

PROBE

		Two-wire		Three-wire	
TYPE		**NPK, NEK, NZK, NMK**	**NCK, NSK**	**NCH**	**NPH, NZH**
Ranges		0 … 200 m water head	0 … 20 m water head		0 … 200 m water head
		See ordercode			
Overload allowed (versus range)		3x	20x (h ≤ 3 m w.h.) 10x (> 3 m w.h.)		3x
Outputl		4 ... 20 mA		0...+10 V (0 V ≤ 80 mV) a measured to the „–" power supply	
Built-in temperature sensor		**NE**, **NM**, **NS** types: Pt100 „B" class			
Power supply		9 ... 30 V DC **NPK Ex:** 12…30 V DC	12 ... 30 V DC	18 ... 30 V DC	
Max. load (U_t=power supply; U_{min} = min. transmitter voltage)		$R_{min} \quad \frac{U_t \quad U_{min}}{0{,}02\,A}$		≥ 5 kohm	
Current		–		< 6 mA	
Accuracy		± 0.5 %	± 0.25 %		± 0.5 %
Built-in 4-wire temp. sensor		**NEK** and **NSK** types only		–	
Temperature coefficient		≤ ± 0.1 % / 10 K		≤ ± 0.2 % / 10 K	
Operating temperature*		-10 ... +60°C	0 ... +60°C		-10 ... +60°C
Mechanical connection		NAA-209 cable mounting wedge clamp, **NZ** and **NM** types ¾" BSP thread			
Ingress protection		IP 68			
Electrical protection		Class III.			
Electrical connection		Shielded cable with breathing capillary Ø 7 mm			
Wire cross section		0.34 mm²			
Cable length		0 ... 300 m (see ordercode)			
Probe dimensions		**NPK, NEK:** Ø 22x145 mm **NZK, NMK:** Ø 38x152 mm	Ø40x140mm		**NPH:** Ø 22x145 mm **NZH:** Ø 38x152 mm
Mass		**NPK, NEK:** probe: 0.2 kg **NZK, NMK:** probe: 0.3kg	Probe: 0.4 kg		probe: 0.2 kg
		Cable: ~ 0,06 kg/m			
Wetted parts	Sensor	1.4404	Al_2O_3 ceramic		1.4404
	Probe	1.4571			
	Cable coating	Polyurethane			
	Sealing	VITON (FKM)			
	Protecting cap	ABS	–		ABS

* special order max. +75°C

ADDITIONAL DATA FOR EX APPROVED MODELS

Tyoe	**NPK-3□□-□**
Power supply	12…30 V DC
Ex marking	Ex II 1 G EEx ia IIC T6
Intrinsical safety	U_i = 30 V, I_i = 100 mA, P_i = 0.8 W C_i = 20 nF+ h x 0.04 nF; L_i = 100 µH + h x 0.9 µH (h = cable length)

ACCESSORIES

Cable terminal box	**NAA-101**	
Dimensions	93 x 93 x 55 mm	
Ingress protection	IP 65	
Operating temperature	–40 °C … +70 °C	
Material	Plastic	
Cable gland	M20x1.5 (cable ∅ 5… ∅ 10 mm)	
Elektromos csatlakozás	Terminal block for cable with max. cross section of 2.5 mm²	
Cable terminal box with overvoltage protection	**NAA-102 ***	
Data	See: NAA-101	
Electrical data	See: OVP	
Cable mounting wedge clamp	**NAA-209**	
Max. mech. Load	With cable length up to 300 m	
Operating temperature	-20 °C … + 60 °C	
Overvoltage protection	**OVP12/33 ***	**OVP32/33 ***
Mounting	outdoor	DIN 35 mm rail
Dimensions	72 x 42 x 19 mm	62 x 65 x 18 mm
Ingress protection	IP 54	IP 20
Breakdown voltage	33 V	
Absorbed energy	600 W / 1 ms	
Serial resistance	13 ohm	
Leakage current	≤ 10 µA	

* only for 2-wire 4…20mA equipments.

2.1 ACCESSORIES

User's Manual

Certificate of Warranty

Declaration of Conformity

NAA-101 cable terminal box

2.2 ORDER CODE

NIVOPRESS N ☐☐ – ☐☐☐ – ☐ *

TYPE	CODE
Capacitance	**C**
Piezo	**P**
Piezo + Pt100	**E**
Capacitance + Pt100	**S**
Piezo, threaded	**Z**
Piezo, threaded+Pt100	**M**

OUTPUT	CODE
Two-wire 4...20 mA	**K**
Three-wire 0...10 V	**H**

VERSION	CODE
Normal	**2**
Ex	**3**

RANGE**	CODE
1 m water h.	**1**
2 m water h.	**2**
5 m water h.	**3**
10 m water h.	**4**
20 m water h.	**5**
50 m water h.	**6**
100 m w.h.	**7**
200 m w.h.	**8**

CABLE LENGTH	CODE
0 m	**0**
10 m	1
:	:
90 m	9
100 m	A
200 m	B
300 m	C

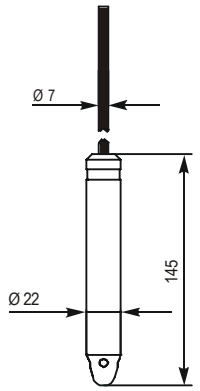
	CABLE LENGTH	CODE
up to 100 m	0 m	**0**
	1 m	**1**
	:	**:**
	9 m	**9**
over 100 m	0 m	**0**
	10 m	**1**
	:	**:**
	90 m	**9**

* The order code of an Ex version should end in '**Ex**'
** Can be set within the range on special request

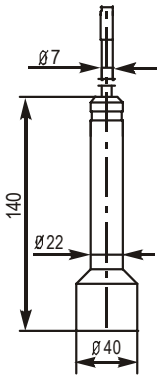
Cable terminal box: **NAA-101**
Optional (to be ordered separately) **TYPE**
Cable terminal boksz with OVP: **NAA-102**
Cable holding assy: **NAA-105**
Cable mounting wedge clamp: **NAA-209**
Sewage adapter: **NAW-104** (for NP types)
OVP units: **OVP12/33** (outdoor)
OVP32/33 (DIN rail)

2.3 DIMENSIONS

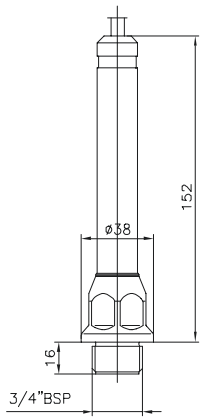
NIVOPRESS NP, NE PROBE



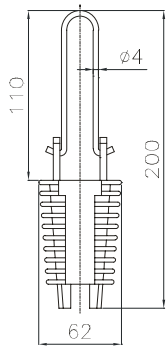
NIVOPRESS NC, NS PROBE



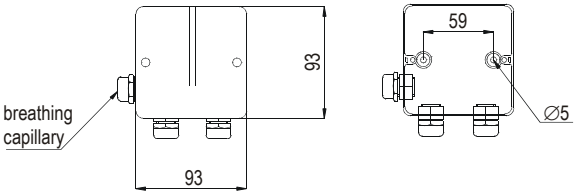
NIVOPRESS NM, NZ PROBE



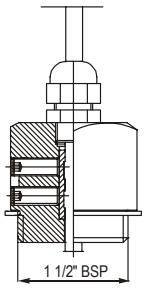
CABLE HOLDING WEDGE CLAMP
NAA-209



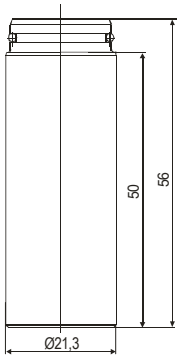
CABLE TERMINAL BOX
NAA-101 és NAA-102



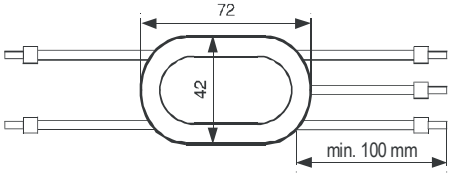
CABLE HOLDING ASSY
NAA-105



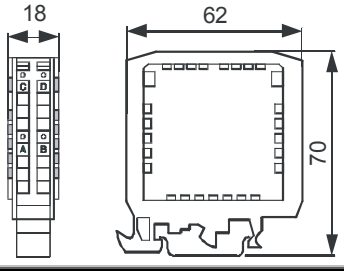
SEWAGE ADAPTER
NAW-104



OVP 12/33 OVERVOLTAGE PROTECTION UNIT



OVP 32/33 OVERVOLTAGE PROTECTION UNIT



3. INSTALLATION

For fastening the cable use cable mounting wedge clamp NAA-209 that provides a solution for hanging the cable without slipping and risk of rupture.

For the NP, NE types the NAW-104 sewage adapter can be snapped in the place of the plastic protecting cap.

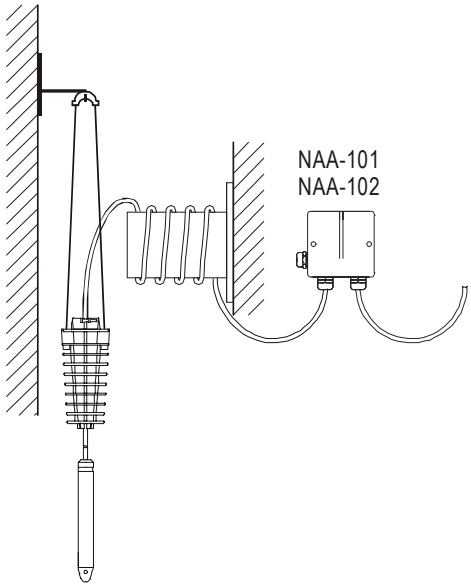
STEPS OF INSTALLATION

- Feed the special cable through the glands, arrange proper length of cable and fasten the cable with the glands.
- Excessive cable parts has to be wound on a pipe with a min. diameter of 100 mm.
  The special cable must not be cut short!
- Let the probe down to the lowest possible point, as only the height of the liquid above the probe will be measured.

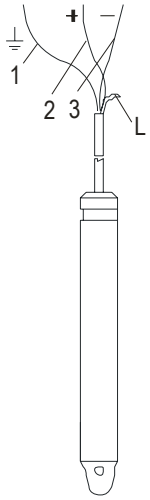
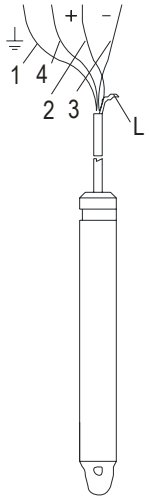
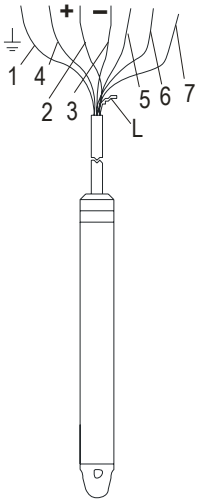
For connecting the special breathing cable and the signal cable use the cable terminal box **NAA101** (accessory) or **NAA102** (optional) (with IP65), that accommodates the cable end in an ambience free of dust and humidity. Fasten the cable mounting wedge clamp (e.g. by the use of 2 pcs of M4 screw) to a plain surface. In open air or industrial applications the transmitter should be protected against transient surges / overvoltage.

The GND of the OVP must be connected with the shortest possible wire (and without direction changes) to the protecting ground. In this case it is suggested the **NAA-102** terminal box (with OVP) is installed close to the location of the measurement. At the opposite end of the cabling the use of an additional over-voltage protection (**OVP12/33** or **OVP32/33**) is advised close to the processing unit.

MOUNTING EXAMPLE

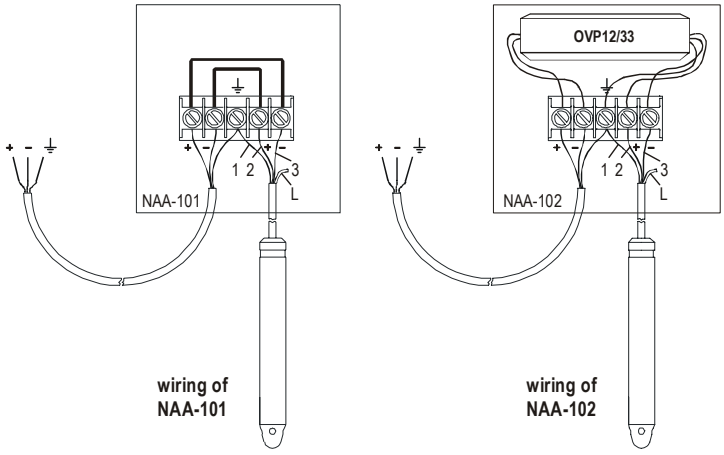


4. WIRING

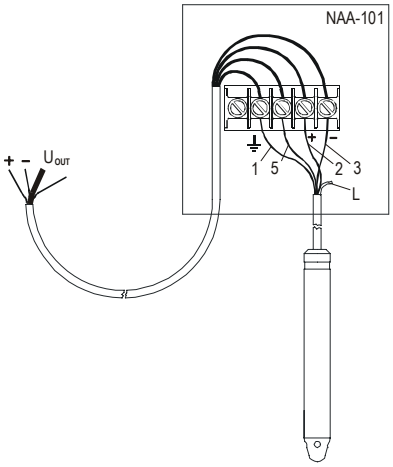
TWO-WIRE	THREE-WIRE	TWO-WIRE + Pt100
		

	Cable core	Color
1	Shielding	Yellow
2	Positive power supply	Red
3	Negative power supply	Black with an additional blue-colored insulation
4	Voltage output (3-wire type), Pt100 sensor current drive	Uncolored
5	Pt100 sensor current drive	Uncolored
6	Pt100 sensing	Black
7	Pt100 sensing	Black
L	Breathing capillary	–

TWO-WIRE 4 … 20 mA

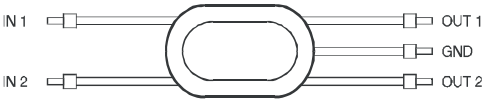


THREE-WIRE 0 … 10 V DC



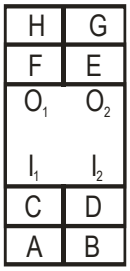
ALWAYS LEAVE THE BREATHING CAPILLARY FREE!

WIRING OF OVP 12/33



IN1, IN2 – inputs
OUT1, OUT2 – outputs
GND – grounding

WIRING OF OVP 32/33

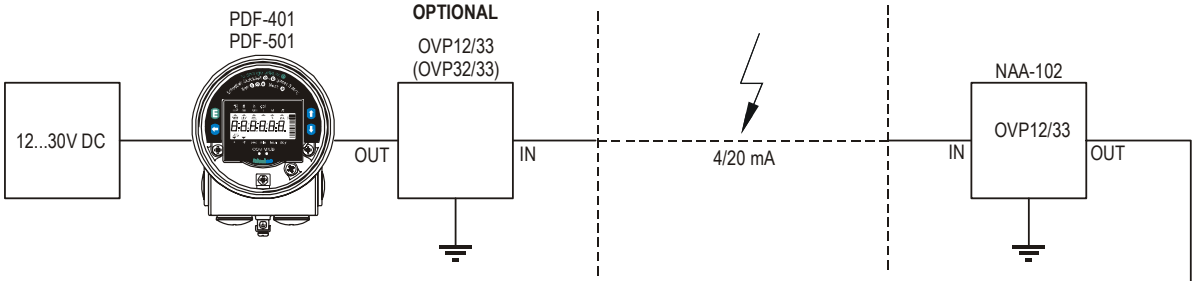


I1 (C), I2 (D) – inputs
O1 (F), (E) – outputs
A, B, H, G – grounding

4.1 SAFETY REGULATIONS FOR THE EX APPROVED UNITS

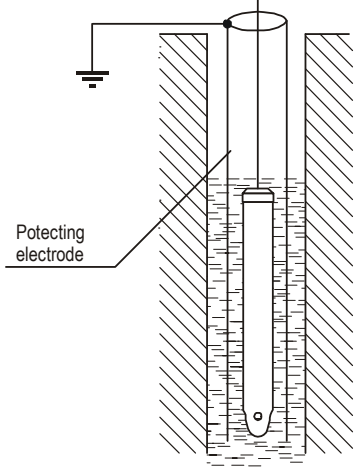
The 'Ex' type hydrostatic level transmitter must be operated in intrinsically safe circuit only (see values in technical data for Ex approved units).
The metal housing of the device must be connected to the EP network using the connection cable marked with 1.

INSTALLATION EXAMPLE USING OVP UNITS



5. PUTTING INTO OPERATION, ADJUSTMENT

The unit installed and wired according to the specification is immediately operable, however the specified accuracy will be reached in six-hour time with short cable and in twenty four hour time with a cable of 300 m length. If correction of insertion lenght is needed loosen the cable holding assy then place the probe to the desired level and finally fasten the cable holding assy.



6. MAINTENANCE, REPAIR

The unit does not require regular maintenance. In some instances, however, the probe may need occasional cleaning to remove surface deposits within the protective cap that can be easily snapped off. Do not touch the sensor membrane. Repairs during or beyond the guarantee period are to be carried out solely by the Manufacturer. Equipments sent back for repair should be cleaned or sterilised by the User. The User must declare that the above has been carried out.

7. STORAGE CONDITIONS

Ambient temperature: -10 °C … +50 °C
Relative humidity: max. 85%

8. WARRANTY

All Nivelco products are warranted free of defects in materials or workmanship for a period of two years from the date of purchase, as indicated in the Certificate of Warranty.

npk2110a0600h_04
February 2008
Nivelco reserves the right to change technical data without notice!